5G: Is India Prepared?

This article is based on "5G shouldn't be rolled out in a hurry" which was published in The Hindu Businessline on 25/02/2020. It talks about the reasons for India **not hurrying the rollout of 5G**.

In April 2019, South Korea became the first country in the world to roll-out a nationwide 5G network. 5G is key for countries looking to capitalize on future technology.

India's **National Digital Communications Policy 2018** highlights the importance of 5G when it states that the convergence of a cluster of revolutionary technologies including 5G, the cloud, Internet of Things (IoT) and data analytics, along with a growing start-up community, promise to accelerate and deepen its digital engagement, opening up a new horizon of opportunities.

In the case of India, 5G networks could improve the accessibility of services such as mobile banking and healthcare, and enable exponential growth in opportunities for unemployed or underemployed people to engage in fulfilling and productive work.

In this context, the Indian government has set a target of commercializing 5G by 2020. However, there is a need for India to pursue the rollout of 5G with a **cautious approach**.

What is 5G?

- 5G is the next generation of mobile broadband that will eventually replace, or at least augment 4G LTE connection.
- 5G offers exponentially faster download and upload speeds.
- 5G will deliver multi-Gbps peak rates, ultra-low latency, massive capacity, and a more uniform user experience.

    Latency, or the time it takes devices to communicate with wireless networks, will also drastically decrease.

- A government panel report points out that with 5G, the peak network data speeds are expected to be in the range of 2-20 Gigabit per second (Gbps).
    This is in contrast to 4G link speeds in averaging 6-7 Megabit per second (Mbps) in India as compared to 25 Mbps in advanced countries.
- KPMG in its report, released at the Indian Mobile Congress 2019, predicts the cumulative impact of 5G in India at $1 trillion by 2035.

Application of 5G

- 5G will help in creating cyber-physical networks which **not only interconnect people, but also interconnect and control machines, objects, and devices**. It will deliver new levels of performance and efficiency that will empower new user experiences and connect new industries.
- Due to high-speed, high-reliability, low-latency network, 5G networks will act as an enabler for the Industrial revolution 4.0.
  5G is expected to form the **backbone of emerging technologies** such as the Internet of Things (IoT) and machine to machine communications, thereby supporting a much larger range of applications and services, including driverless vehicles, telesurgery and real-time data analytics.
    - Industry association GSMA forecasts the number of internet-enabled devices will triple to 25 billion by 2025.
    - 5G can also help make transport infrastructure more efficient by making it smart. It will enable vehicle-to-vehicle and vehicle-to-infrastructure communication, making driverless cars, among other things, a reality.
- A government panel on 5G says the technology will extend the use of wireless technologies — for the first time — across completely new sectors of the economy from industrial to commercial, educational, health care, agricultural, financial and social sectors.
- Also, the primary applications of 5G will be the implementation of a sensor-embedded network that will allow real-time relay of information across fields such as manufacturing, consumer durables and agriculture.
    - The panel set up by the Department of Telecommunications in September 2017 to prepare a roadmap for the rollout of 5G noted in its report that 5G services would have a cumulative economic impact of more than $1 trillion by 2035.
    - According to a separate report by telecom gear maker Ericsson, 5G-enabled digitalisation revenue potential in India will be above $27 billion by 2026.

Why should India not hurry rollout of 5G?

- **Expensive Enabling Infrastructure:** Besides the spectrum, 5G will require a fundamental change to the core architecture of the communication system. The major flaw of data transfer using 5G is that it can't carry data over longer distances. Hence, 5G needs to be augmented to enable infrastructure.
    - A report on 5G by Deloitte stated that rolling out 5G might require an additional investment of $60-70 billion.
    - Simply upgrading the existing Long Term Evolution core will not be able to support the various requirements of all 5G use cases.
- **5G-A Critical Infrastructure:** 5G due to its expansive applications forms the part of critical infrastructure. This makes the consequences of the networks failing or being deliberately sabotaged in a cyber attack significantly more serious.
    - Critical infrastructure is the body of systems, networks and assets that are so essential that their continued operation is required to ensure the security of a given nation, its economy, and the public's health and/or safety.
    - Huawei is a Chinese firm that owns the majority of 5G technology in the world. However, 5G is critical infrastructure, India is of view that any dependence on China for critical infrastructure could compromise India's security.
- **Financial Hurdles:** Telecom industry body Cellular Operators Association of India (COAI) has also expressed concerns about the financial health of the telecom sector (AGR issue).
    - The COAI has also pointed out that 5G is overpriced by at least 30% to 40% compared to international standards and auction in other markets such as South Korea and the U.S.
    - Additionally, the debt-ridden telecom industry of the country has indicated apprehension towards even bidding for 5G airwaves given their weak financial situation.
- **Price Sensitivity:** Device cost is of relevance to a price-sensitive market such as ours. 5G smartphone models are likely to cost much more than the most advanced 4G devices currently available — with enhanced features, additional cameras and sensors to support AR and VR applications.
- The **International Telecommunications Union (ITU)** has validated the correlation between broadband price and adoption levels.
    - A 1 % increase in mobile broadband prices results in 0.13% decrease in adoption rates (low income) and a 1% decrease in mobile broadband adoption results in 0.19 % decrease in GDP per capita (low income).
    - Thus, price increases of 30-50% (due to the introduction of 5G) can lead to a decline in broadband adoption by 3.9-6.5%, leading to a decline of GDP per capita by 0.7-1.2%.
- Also, one of the major challenges is standardising an approach and bringing all of the major technology partners on board.

Way Forward

- Regulatory frameworks will also need to evolve to keep pace with this change. In this context, there is a need for India to enact a data protection law.
- There is a need to set up universal standards and procedure for seamless integration of services and infrastructure under 5G.
  In order to deal with the concern of technical companies (like in case of Huawei) leaking critical information, a "**no-backdoor**" agreement with the Indian government and telecom companies will ensure that no snooping is allowed on its network.
- In order to mitigate initial high cost for establishing enabling infrastructure for 5G, base stations might move to drones or balloons to ensure that the Internet of Everything is also the Internet of Everywhere.
    - This new revolution will take access to connectivity and, through it, access to knowledge to vast sections of the population, and entire geographies that have been cut off so far.
- India needs to invest in research and development in technologies related to critical infrastructure and strive to indigenize them as soon as possible.

Drishti Mains Question

5G is key for countries looking to capitalise on future technology. However, India should pursue its rollout with a little caution. Discuss